FULL TITLE: MASTERCLASS PEDAGOGY FOR MULTIMEDIA APPLICATIONS IN TEACHER EDUCATION

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MASTERCLASS PEDAGOGY FOR MULTIMEDIA APPLICATIONS IN TEACHER EDUCATION

Abstract

This paper describes an elective unit in the application of new technologies for pre-service teachers which employed a metaphor of masterclasses in its design to engage the students in value-added interactions around their individual multimedia projects. A masterclass involves the class group auditing an individual's detailed consultation with a 'master' on work in progress. In this way, general points are demonstrated and iteratively developed through worked examples. By sharing a range of projects, the class group developed explicit understandings of pedagogical design based around the concepts of metaphor, productive redundancy (Lemke 1998), hypertextual links (Burbules & Callister, 2000) and information architecture. The design of this unit's pedagogy of pedagogies is explicated through Christie's (2002) theorisation of curriculum macrogenre and Bernstein's (2000) rules of recognition and realization to show how the pre-service teachers moved from being consumers and 'natives' of digital environments to become analysts and designers of such environments.

Introduction

Teacher education challenges one to do as one says. In this paper, I will say and show what I do, that is, I will explicate, analyse and refine the design of an elective unit in an undergraduate teacher education program in a public Australian university. The unit was devoted to exploring new literacies and new technologies for the classroom through the design of pedagogical resources. My description aims to reveal the unit's pedagogic bone structure so others working in education around multimedia applications at any level can adopt or adapt such design where pertinent. As a reader, I am wary of the celebratory 'I did it my way' genre of literature that recounts a singular event and promotes it as universal good practice, with scant regard for the myriad of contextual constraints that enable or disable innovation. With this risk in mind, my discussion is not about the surface events, but rather the generative concepts and the metaphor of 'masterclass' that informed the unit design. For this reason, I mine theory about pedagogy and classroom discourse, rather than theory about multiliteracies per se.

Masterclass pedagogy has long been used as an adjunct to the highly individualised private tuition model in the preparation of musicians. In a masterclass, the scarce resource of an expert musician's time is made available to more students, by opening up the individualised tuition setting to an audience who share similar learning interests. One or more students prepare and perform work in progress; the expert musician offers constructive feedback; and occasionally makes more general points to the audience drawing from the particular example the student's performance offers. There are constraints on the audience's participation, but they are privy to both the performance and its critique, and thus have access to the discourse and the criteria used to judge and

enhance the performance. Though audience members may not have studied the particular musical work, they are introduced to relevant repertoire and both a student's and the expert's interpretations thereof. More importantly, the talk generated makes explicit the sublimated, implicit understandings that shape, inform and evaluate the musical performance. Thus the audience member may not have received individual attention, but they can benefit in many ways from the discussion underway and take these new understandings to their own endeavours. They might well be the performers in the next masterclass. In this way, general points are demonstrated and iteratively developed through various worked examples.

This pedagogy coheres with Lave and Wenger's (2002) social model of learning through 'legitimate peripheral participation', whereby newcomers to a community of practice are included and inducted along a pathway that facilitates increasingly sophisticated engagements in the community's specialist practices. Their participation is an authentic, legitimated task, contributing to the community's endeavours as opposed to a heuristic exercise. The community of practice in mind here is not however that of technology experts, but rather that of pedagogy experts. My treatment foregrounds the role and contribution of the 'master' in 'masterclass' pedagogy, in contrast to the 'naïve constructivism' (Windschitl, 2002, p.138) that seems popular in current higher education online pedagogies, 'equating activity with learning' and making a fetish of peer interactions (see Doherty, 2004).

Teacher education institutions have been grappling with the challenges posed by the spread of information and communication technologies (ICTs) for over a decade now.

Foundational concepts such as ‘literacy’ and ‘text’ are being revisited and reinvented to accommodate the proliferation of new genres, new literacies and new textual practices (New London Group, 2000; Unsworth, 2001). In Australia, pre-service curricula and assessment tasks have been redesigned to address visual literacies, technological competencies, and perspectives on technology’s place in society (for example, Kapitzke, 2000). Despite recent backlash criticisms of school curricula’s enthusiasm for these new textual landscapes, (for example, ‘Let’s go back to basics, beginning with the three R’s,’ (Donnelly, 2006)), the beginning teacher produced in the Australian higher education sector is becoming better equipped for the digital conditions of the twenty-first century. On these grounds, this paper attempts to move the conversation about teacher preparation and multiliteracies applications away from operating the technology to thinking about the embedded pedagogy of pedagogy and how to do as we say to do in these environments, especially in elective units where motivated, technologically competent students self-select to pursue such topics.

In the last decade, an important strand of educational literature heralded the rapid pace and many dimensions of change due to the saturation of the social fabric by ICTs, urging more creative curricular responses from educational institutions (for example, Lemke, 1998, 2002; Luke, 1996). In this vein, Green and Bigum’s (1993) influential work, ‘Aliens in the classroom,’ portrayed a generational schism evident between the digital lifeworlds of students and teachers. Similar ideas of digital ‘immigrants’ and ‘natives’ (Prensky, 2001a, 2001b) are now circulating in the higher education sector’s approach to online learning. Parallel to this strand, there has been an ongoing concern over whether the teaching profession was/is ready for the information revolution

(Lankshear, Snyder, & Green, 2000; Meredyth, Russell, Blackwood, Thomas, & Wise, 1999) and equal concern over the limited imagination or unambitious 'design sensibilities' (Bigum, 2002) evident in how ICTs were 'schooled' (Lankshear, Snyder et al., 2000, p.37) to fit in with the status quo, rather than to transform established practices. In fact, some theorists point to the more general syndrome of the 'domestication' of ICTs in society (Haddon, 2004).

With the intervening years, it needs to be acknowledged that the 'alien' culture or digital 'native' generation such literature documented has duly arrived in university classes, ready to become teachers, so the profession can now reap the rewards of this generation's greater technological competence. Pre-service curricula may not have to worry as much about the 'operational' dimensions of electronic literacies (Lankshear, Snyder & Green, 2000), though there will inevitably be some for whom such a focus is still necessary. Similarly, schools' networking capacities are being up-graded, computers are finding their way into staff rooms, school libraries, classrooms and even onto the teacher's desk. The ecology, at least in many Australian schools, has perhaps evolved beyond the point of 'crisis', 'change' and 'challenge' and we can contemplate longer term goals, in particular, that of promoting rich, rewarding pedagogies that use the multimedia capacities of ICTs in thoughtful, creative ways.

To this end, an elective unit, offered in the student teachers' last semester before graduation from a four year course, was project-based. Students were invited to design, produce and test a multimedia resource pertinent to their future career as secondary teachers. They also had to submit a report outlining the pedagogic reasoning behind

their design. The brief was purposefully open allowing both technological product and process designs in whatever curricular field was pertinent to the enrolled students. There were only five students for the semester described here, but it is argued that the design could work with larger classes as well. To support the students, the 9 week unit had a weekly two hour class and a web site with an asynchronous discussion forum and hyperlinks to course readings. It soon became clear that I as the lecturer had little additional technological 'know-how' to offer these 'digitally native' students. Any questions regarding the intricacies of emergent software were better answered or demonstrated within the peer group. I did however have a lot to offer in terms of pedagogic designs and their embedded literacy demands. This realisation focused my efforts on teaching them to be teachers through their multimedia designs, shaped the curriculum to be explored and refined over the course interactions both online and in class.

This paper is presented in five parts. Firstly, the valorisation of talk as a pedagogic good is reframed to address the inevitable time constraints on any program and the masterclass metaphor is introduced as a strategy to add value to classroom interaction. Secondly, the pedagogic backbone of a masterclass series is then redescribed through Christie's theory of curricular macrogenre. Next the necessary shift in the student from being a consumer to a designer of multimedia resources is understood with reference to Bernstein's distinction between rules of recognition and rules of realisation as curricular aims. Using this frame, a number of the thematic concerns targeted for development over the curricular macrogenre are then described to demonstrate how they applied both in the evolution of students' project designs and in shaping my pedagogic design of the

unit. In the conclusion, this design is offered as a model for 'doing as we say' in preservice teacher education.

Adding value to classroom talk

Oral and virtual discussion strategies are celebrated generally in constructivist and socio-cultural theories of learning, and more particularly in 'conferencing' and 'joint construction' traditions in literacy pedagogies. Over my career, I have embraced such practice in a variety of contexts, but often feel frustrated by the lack of time to pursue detailed individual consultations, or to process and extend group collaborations. I am also aware that more talk is not necessarily pedagogically better, and that to be productive, the talk needs to be resourced with ideas, focussed, purposeful and productively scaffolded so the student moves to more sophisticated engagements with the target community of practice. When I inherited this project-based unit, I found the idea of a masterclass a helpful metaphor to organise a *modus operandi*, for both the online and face to face interaction, that could achieve ongoing individualised consultation on each student's project, while resourcing and focussing the classroom talk. By 'metaphor' I am referring to 'understanding and experiencing one kind of thing in terms of another' (Lakoff & Johnson, 1980, p.5). This goes beyond the level of wording alone, and helps systematically form the concept and shape the thinking which informs activity.

By reconceptualizing my interactions with students around their individual projects as a series of masterclasses, I found a sustainable way to focus class and online discussions for all students. Any metaphor will selectively foreground certain meanings, while

masking others, thus there were inevitably aspects of my pedagogy that did not fit this metaphor. However, the focus here is to use the conceptual shell of the metaphor to make productive connections across very different projects and settings. In the next section, the larger trajectory over a sequence of such 'masterclass' experiences is theoretically re-described as a curricular macrogenre.

The pedagogic backbone

The concept of curricular macrogenre (Christie 2002, 1997) describes how the various learning, teaching and assessment activities in any program of study articulate and cohere to form a whole experience. The emphasis thus is on the connection between parts. A macrogenre builds from the sociolinguistic concept of genre, understood as a conventionalised textual form that accomplishes a staged, purposive, goal-oriented process of communication (Martin, 1992). Using this frame the commonsense notion of 'lesson' is construed as a curriculum genre, understood to be 'temporally sequenced and serial in character, reflecting those requirements of pedagogic activities to do with pacing and ordering the steps in which teaching and learning are done' (Christie, 1997, p.136). In turn, a curriculum macrogenre is the larger picture of a program sustained over a chain of interrelated curriculum genres.

For Christie, the definition of a macrogenre requires not only a sequence, but also 'a state of interdependency, in terms, metaphorically, at least, either of expansion or projection' (p. 148), such that

> there will be some growth in the logos – some changes logogenetically – as the classroom text gains momentum, moving forward across its 'beginning, middle, end' progression, opening up possibilities in using language, closing others, and hence building forms of consciousness.

In simple terms, this means that the acquisition of the new knowledge or consciousness should become evident in the students' growing usage of the target discourse and its technical vocabulary. Thus the linguistic surface indexes the students growing control of the community's specialist practices.

Christie (1995, 1999) distinguishes between different macrogenre patterns typical in different disciplines. For this paper, her distinction between 'linear/serial' and 'orbital' macrogenres in terms of the nature of links between parts is particularly valuable. The former is a macrogenre where the knowledge is built in the series of additive steps (+), each reliant on the precursor. In contrast the 'orbital' macrogenre is '"accretive" rather than incremental' (Christie, 2002, p.26), and is organized as a series of examples (=) of core understandings. As an example for an orbital macrogenre she describes a geography unit that features a core idea or principle, for example, the conservation of biodiversity, which is explored across of number of examples of endangered species.

So how does this relate to my masterclass design? By conceptualizing the program as a series of masterclasses that use selected students' projects as examples with which to develop core understandings about constructing pedagogically rich multimedia resources, I am in essence exploiting an orbital curriculum genre design at the level of

each lesson. Each week's reading and lecture treatment introduced a core problematic, for example:

- 'How can you address the multiliteracy demands inherent in your design?'
- 'How can you visually design the interface to scaffold navigation and communicate the information architecture?'
- 'What understandings about learning underpin your design?'

Each weekly problematic was then used to constructively comment on the students' work in progress. The prompt for the week's online interaction similarly posed the core problematic as a question, and students were asked to post a response referring to that aspect of their evolving designs. The ensuing exchanges with myself or other students helped challenge and articulate ideas for their final designs and reports.

Their postings and my individualized feedback were open for all to see, as befits the masterclass metaphor, so the students could learn from each other's efforts as much as their own. In terms of resourcing, this degree of 'servicing' was possible given the relatively small class size. However, the 'masterclass' metaphor would support allocating a rotating sample of students to respond to each week's problematic as a sustainable practice for larger class groups. This curriculum genre for each lesson could be mapped as shown in Figure 1.

(INSERT FIGURE 1)

The exemplars attached by dotted lines refer to student projects that weren't explicitly considered in this particular masterclass, but to which the outcomes of the masterclass could be applied, that is, through the reflection provoked or 'accreted' in the masterclass audience.

On another scale, the macrogenre can be seen to be incrementally or linearly structured, as the core problematics were progressively stacked up and interrelated to produce a rich understanding of the complexities of designing pedagogically sound multimedia resources. In other words, the problematics were not either/or issues to be considered in isolation, but 'both/and' facets of a cumulative complexity. In this way the student projects were revisited and constructively critiqued with regard to additional problematics. This additive macrogenre could be diagrammatically mapped as shown in Diagram 2.

(INSERT FIGURE 2)

This latter map includes an introduction phase and a closure phase. In brief, for the introduction phase, I produced a video-taped interview with my 9 year old son, asking him to demonstrate and evaluate a commercial multimedia 'educational' resource promoted within his school. This resource, my son's evaluation, and his demonstration of multiliteracies were referred back to over the life of the unit, to exemplify points and

pose problematics. In addition, in the double vision typical of teacher education, my design behind the production of this pedagogic resource became grist for the mill too. The exercise was not about the video's production values, but rather about producing a productive pedagogic resource.

For the closure phase, our last class session was devoted to 'usability' testing of each other's products. Using a data projector to enable the masterclass setting, one student installed and engaged with the multimedia resource produced by another student. This time however, the 'audience' were resourced and positioned as a panel of 'experts' capable of interrogating the pedagogic design and its execution. Through their participation in this role they demonstrated the 'logogenesis' achieved over the macrogenre, that is, the development of a shared language and explicit knowledge frame for pedagogic design.

From consumer to designer

For these students to take up the 'expert' role in the masterclass, they were essentially demonstrating a shift from being mere 'inhabitants' or 'consumers' of digital environments to being the architects of such designs. In his theory of pedagogic discourse, Bernstein (2000) makes a pertinent distinction between rules of recognition and rules of realisation as objects of curricular knowledge, that helps clarify the learning that must happen for this shift to take place. The rules of recognition refer to understandings that allow individuals 'to recognise the specialty of the context that they are in' (p. 17), that is, to distinguish between the particular pedagogical context and external contexts with regard to its required roles, discourse, register or practices. In

contrast, the rules of realization refer to understandings that allow individuals to 'to produce the legitimate text' (p. 18). Legitimation ultimately comes from the community of practice which the student seeks to join.

Language and literacy educators might relate this distinction to that between receptive and productive language competence - the difference between on one hand being able to read an exemplar of a genre appropriately, and on the other, being able to write or produce an example of the same genre. To realize a pedagogic multimedia text takes more than being au fait and experienced with multimedia environments as these digital 'natives' presumably were. It is here that the genre approach's 'model deconstruction' phase has proven so valuable, unpacking a good example to show what choices were made in its assembly. With the masterclass metaphor, however, I have shifted this explicit work of excavating tacit principles of design to a construction phase, given the diversity of projects pursued by the students, thus enhancing everybody's vicarious 'repertoire'.

The concept of 'rules of realization' however probes further by forcing the pedagogy to make evident the criteria whereby the students' efforts are to be judged as legitimate versions of the intended exercise. Given the fact that for most of these students, their web-authoring, hypertext and multimedia skills far outstripped mine, this distinction was important in highlighting that the text to be produced was not to be judged by its whizzbang multimedia accomplishments, but by its design as a pedagogical resource. Thus my concern was to produce a pedagogy about pedagogy, not about multimedia authoring. The students needed to acquire a different gaze and conceptualisation that

took them beyond the recognisable and familiar visual interface into how knowledge and learning pathways were to be optimally constructed within and behind their resources' designs.

The thematic backbone

In this section, I briefly outline four of the pedagogical problematics we developed across the unit, my purpose being to demonstrate how I strived to achieve of these in my pedagogic design as well – doing as I say, so to speak. I also draw on the student projects and postings and demonstrate the uptake of these ideas in their work. These thematic principles included: building in productive redundancy; exploiting metaphors; being aware of hyperlink functions; and designing information architecture.

1. **Building in productive redundancy**

Lemke (1998, p. 290) makes the point that script-only text has a very low rate of redundancy: 'it does not code in much more than is needed to make the key distinctions between one word and another'. As a teacher and as a learner, I have come to appreciate pedagogic texts with high redundancy, that is, texts that deliver the same information in a variety of ways be they written, verbal, visual, or whatever semiotic mode is available. Multimedia texts do this so well and can exploit colour, font style, sound, animation and display values to resonate, recruit and cue meanings available elsewhere. Lemke uses the term 'multiplying meaning' (p. 288) to refer to meanings 'that are more than the sum of what each could mean separately.' While talk is essentially multimediated in itself, with the dimensions of sound, gesture, stress and intonation as well as words, I aimed to offer the students additional productive redundancy with PowerPoint textual

and visual displays in any class presentation. Text on screen, enhanced with colour/font styling and images to foreground particular meanings, reinforced my oral text, and provided a point of reference for student questions and comments. These visual cues were later made available online to supplement readings, postings and discussion. In addition, the design was productively redundant over time, in that the accretive, orbital lesson structure allowed these ideas to be re-visited and processed with reference to a number of examples, first in class, then online. In our classroom discussions, we eventually shared this term 'productive redundancy' and applied it to our evaluations of work in progress.

One student's project was a web-based 'workbook' on popular culture for the English curriculum area. His idea was triggered by the outdated photocopied resources he had encountered in use at a school whilst on practicum. He aimed, through his intrinsically renewable resource ' *in a format that can be updated, adjusted and modified without the cost of printing or staples'* , to give teachers and students access to where popular culture was alive and happening. His resource included activities ready for students and shells for teachers to build their own activities. He had accumulated a rich collection of materials and possible pathways, but their presentation was initially incoherent and haphazard. With feedback, he developed a clearer structure and 'productively redundant' cues, whereby spatial organisation and semiotic aspects such as animation, colour, icons and font styling worked together to direct different users, such as teachers and students, to the relevant pathways through the resource.

2. Exploiting metaphors

In my son's evaluation of the commercial multimedia resource, he described how he knew what to do because it was 'like a game', and that he was familiar with that genre's common feature of choosing an avatar to move through the educational 'game'. Gee (2003) would argue that a metaphor of gaming is worth exploiting when designing pedagogy in a number of ways. Where I used the 'masterclass' metaphor to shape my pedagogic thinking, the students were similarly encouraged to choose a metaphor that would help facilitate and streamline both their design and their user's engagement with their resource.

Another student thus re-conceptualised his hypertext PowerPoint resource as a 'choose your own adventure' text, to encourage the user to explore further links as open-ended possibilities. His resource presented a body of knowledge outlining a variety of painting techniques for a Visual Art curriculum, integrating self-created texts and links to selected websites, in some cases with videos of the technique, in others cases examples of relevant artwork. Hyperlinks were textually presented as teasing questions to encourage the reader to choose their next step. His posting below captures him experimenting with different metaphors to achieve a more articulated sense of the design he is aiming for:

> *From our last meeting, I finally think that I understand the different pedagogical models of learner/teacher/knowledge within my project. Metaphorically speaking, my project is indeed a 'workbook'. It is a project that uses 'visible' (explicit) pedagogy in order to help students develop knowledge, skills and understandings regarding painting techniques and concepts. … In regards to incorporating this resource into a school context, this metaphor is useful as it*

does not sound too innovative for teachers to handle. On the other hand, I think that the metaphor of a workbook is too sterile and humdrum for students. A more exciting way of viewing my project would be as a 'choose your own adventure book'. Although this metaphor does not necessarily imply that my project is a factual resource, it does suggest other student-appealing qualities. That is, it is a resource with many pathways (hyperlinks) that enables students to discover painting techniques and concepts that are relevant to their art making practice.

Another student built her digital resource, a PowerPoint template for the public display of student art work, around the metaphor of art gallery displays and their particular genre of informational panels. Her original proposal was titled *'Using Data Projectors to Meet 'Display' Requirements of the Junior Visual Arts Syllabus '*, but she later elaborated it in terms of being *'really a "virtual" or "dynamic" didactic panel, I suppose (those panels you see in galleries).'* Her design staged a layered PowerPoint presentation for projection in a school's public spaces, starting with large images of the students' artwork. Then, by exploiting the gallery panel metaphor, she added to each image the title and artist's name, a quote from the artist about their inspiration, medium or aims, and optional images showing the work in progress, or other works that resonate with the original piece. These additional texts/images were animated to appear or float over or around the artwork and thus shift the way the audience engaged with it. Her template supported both students and teachers to prepare and mount such displays.

A third student used the metaphor of ‘brainstorm’ to conceive a provocative resource integrating topics across English and Visual Arts curricula. Using a Photoshop animation of a Coke can dis-assembling and re-assembling like a peeled apple as the initial provocation to introduce his theme of ‘Consuming Knowledge’, the page then ‘exploded’ into a myriad of possible connections to be explored – information and artworks sitting side by side in the ‘brainstorm’. This student accounted for the premises of his design using generative metaphors to think with and through:

> *Knowledge is not accessed and acquired through a singular one-way avenue; a dark alleyway leading to a backroom of enlightenment. Rather epistemology involves never-ending circuitry and matrixes that can be investigated and stumbled upon through infinite pathways …*

3. Being aware of hyperlink functions

As part of the curricular content, we reviewed Burbules and Callister’s (2000b) explorations of hyperlinks and the variety of meanings/connections made when resources are hyperlinked. Their work alerts us to the rhizomatic structure of hyperlinked text and how the links can produce both excess flexibility and excess rigidity: ‘hypertext either can provide too much information, and too loose a structure; or provide too selective a body of information, and too rigid a structure’ (p. 61). Thus the strategy of putting things beside each other in a pedagogic text, be it oral, written or multimedia, needs to be scrutinised in terms of what effect their collocation is attempting to produce. With these understandings, we started to use

the term ‘hyperlink’ metaphorically to refer to the relations between pedagogic elements.

With the students’ work, this principle helped us make explicit the pedagogical purpose in sequences, and refine visual layouts. It also informed the insertion of heuristic ‘mouseover’ or ‘screen tip’ texts in some of their resources, to make connection explicit and to inform the user what the potential link might offer. In my pedagogy, I treated my talk and online texts as part of the hyperlinked text, and made conscious, explicit links between what’s gone before, what’s coming ahead, how certain reading resources might extend the point we are discussing, and how concepts might be cognate or in conflict. We developed a common vocabulary for a typology of logical relations - extending (‘+’), elaborating (‘=”), and enhancing (‘x’) relations - drawn from systemic functional grammar and used in macrogenre theory (Christie, 1999a, 2002). These can be exemplified in the unit’s design as: adding new principles and concepts across the macrogenre (A +B); exemplifying principles and concepts in the masterclass lessons (A = B); and drawing out tensions between the principles (A x B).

As an example, the ‘brainstorm’ interdisciplinary project set out to purposefully rub stimulus materials together to disrupt as well as build knowledge:

> ***I propose a learning object that could be suitable in both traditional and rich task learning environments; one that problematises rigid notions of teaching***

with boundaries with the integration of subject specific knowledges that either compliment or challenge each other.

Similarly, the 'choose your own adventure' Visual Art resource purposefully included a variety of links – those that exemplified the technique (=), those that provided additional steps of information in the technique process (+), and those that disrupted (x) the categories, for example a technique used in an unusual way. The vocabulary we shared allowed us to perceive and evaluate how the links performed in the pedagogical design.

4. Designing information architecture

As students eagerly jumped into building their resources, our masterclass discussions invoked a hypothetical novice user to draw out the need to consider how the design was implicitly structuring knowledge, and whether there was a better, more cogent way to structure and cue the virtual spaces, connections, navigation pathways and thus learning for this novice user. Rosenfeld & Morville (2002) point out that good information architecture becomes invisible, but these pre-service teachers needed to engage with it explicitly to acquire the 'rules of realization' behind pedagogically rich multimedia resources. The concepts from the discourse of information architecture such as 'findability' and 'granularity' being the 'relative size or coarseness of information chunks' (Rosenfeld & Morville, 2002, p.5) were presented, then students were asked to map their design as a blueprint of its information architecture. This exercise helped students to understand issues of breadth/depth, to organise hierarchical classifications, and to experiment with

polyhierarchical or network schema. A careful mapping of the information architecture helped to identify gaps in the knowledge presented, sharpen the focus of the content and to make additional links. As an example, the following posting shows how I as the ‘master’ in the masterclass pushed for more clarity in the information architecture of both the resource’s design and the embedded pedagogy:

> *I can see the digital workbook as a rich resource, especially for popular culture topics … What are your parameters for 'popular culture' - will you need to focus or make some internal distinctions between types eg film, music, magazines, advertising etc? Or is your purpose more to take concepts and explore a concept across the different types of 'popular culture', ie cutting the cake in the opposite direction? This might come clearer with your structural concept map ... You may like to think about my comments today about open searches as 'flabby pedagogy' ... not that students shouldn't be searching the web, but will your process lead them through a model site, and offer a worked example of their eventual task, then scaffold how to approach the open task?*

In particular our focus on information architecture focussed our attention on the navigation cues, and how to make them more routine or seemingly ‘intuitive’, with multiple, ‘productively redundant’ codings (for example in graphics, layout, font size and colour) to communicate the mapping of information or process. The following posting, made later in the unit by the student to whom the prompts above were addressed, reflects how the learning was taken on board:

> *Central to its design is the ability to enable the user to navigate the product in an environment that user friendly, articulate, colourful and purposeful with links and nodes exploring and encouraging the user to engage with the program. Keeping the format uncluttered ensures clarity and minimises problems that may exist.*

In my own pedagogic design, my information architecture had been conceptualised and realised in the design of orbital curriculum genre, nested within the serial/linear macrogenre trajectory. This was conveyed to the students in a number of ways – for example: the unit outline in a grid; the accumulating online archive of lecture notes stored by temporal sequence with an additional summary cue to the concepts covered; the online discussion prompts which shifted the discussion to the next topic, and knitted the students' responses together in their threads.

Conclusion

In conclusion, this design is offered as one possible model for 'doing as we say'. The discussion outlines the process which is exactly that which I was asking of my students. I was trying to do as I say, by making evident the knowledge architecture in my pedagogic design, explicating what understandings of learning underpin this design, articulating careful pedagogic principles regarding the value and purpose of interaction, and exploiting a productive metaphor to facilitate purposeful communication.

In my introduction, I argued that the ground may have shifted from under early efforts to address multiliteracies for the pre-service teacher. Many of our younger recruits to

the profession have grown up in a digital ecology, so we can move on from crisis scenarios to more conscious pedagogic enrichment. The students produced very exciting and technologically impressive work but, as I argued in the introduction, that might well have been expected given their generation's comfort with ICTs and their self-selection. More interesting to me was their growth as pedagogues evident in the conversations we had around the topic of design, and how this masterclass pedagogy allowed them to progressively polish their ideas and come to articulate principles that they could export to the next project, and more generally to their pedagogical careers.

This retelling has inevitably refined the design and the intentions behind it. As with any pedagogy, the lived enactment was not as complete or neat as intended, and this retelling has helped clarify the ideas. However, with a firm grasp on where I wanted to direct the conversation, and working with the resources the students brought into the class with them, we shared a very fruitful semester and produced some powerful, highly scrutinised and well articulated pedagogical designs. This pedagogy stands in stark contrast to units where student hand in their unit plans at the end for individual assessment.

Masterclass pedagogy could be adapted to formatively support student efforts across any project-based curriculum. It will encourage students to take up the expert role, give them access to explicit criteria and a vocabulary to express the 'rules of realization' at their level, so they can in turn interrogate their own and others' efforts constructively. Within each week's orbital curriculum genre we could share the individual consultation publicly and judiciously make links between the particular example, and the more

general shared objectives. Within the additive macrogenre, these masterclass experiences built on each other. The preservice teachers thus acquired pedagogical questions, perspectives and principles, not just technological skills.

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